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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,020

05/12/2005

Mats Dahlback

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8677

7590

10/17/2006

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EXAMINER

AWAI, ALEXANDRA F

ART UNIT

PAPER NUMBER

3663

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/517,020	Applicant(s) DAHLBACK ET AL.	
	Examiner Alexandra Awai	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/12/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-22 have been examined.

Claim Objections

2. Claims 1, 8 and 20 are objected to because minor informalities. The term "during" in claim 1 should be replaced with "for", and the term "0" in claims 8 and 20 should be replaced with "O". Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 12 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear from claims 6 and 18 in what way the composition is in accordance with Zircaloy 2 or Zircaloy 4.

Claim 12 provides for the use of a cladding tube, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 1 and 13 recite the broad recitation "at least ...contains zirconium", and the claims also recite "mainly contains zirconium" which is the narrower statement of the range/limitation. Similarly, claims 3, 6, 15 and 18 recite the broad recitation "substantially ... 100% (or according to Zircaloy 2)", and the

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claims also recite “completely 100% (or according to Zircaloy 2)” which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahlback (EP 0 674 800 B1) and Foster et al. (4,933,136).

Dahlback discloses a zirconium cladding tube with internal liner and a method for fabricating it. The disclosed cladding tube comprises an outer component consisting of a zirconium alloy such as Zircaloy 2 or Zircaloy 4 (col. 5, lines 22-24) and an inner component consisting of a zirconium-tin alloy with 0.1 to 1% tin, 200-450 ppm iron, and less than 600 ppm oxygen (col. 6, lines 4-16). The inner component is joined to the outer component in the

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conventional manner (i.e., metallurgical bonding) and subsequently the final annealing is carried out at 570°C for 1.5 hours (col. 6, lines 39-45). These teachings are particularly relevant to claims 1, 4-8, 11, 13 and 16-20. With regard to the various ranges recited in the claims, see MPEP § 2131.03, which states:

“[W]hen, as by recitation of ranges or otherwise, a claim covers several compositions, the claim is ‘anticipated’ if one of them is in the prior art.” *Titanium Metals Corp. v. Banner*; 778 F.2d 775, 227 USPQ 773.

Dahlback does not explicitly state the degree of recrystallization achieved using the method, or that the final annealing is carried out at a temperature between 485°C and 550°C.

The degree of induced recrystallization is dependent on the material composition being annealed, and the parameters – namely temperature and duration – under which the annealing takes place. Those skilled in the art are well-versed in modulating these parameters in order to achieve the desired degree of recrystallization in balance with other desired material qualities. Foster et al. in particular teaches the manufacture of a cladding tube wherein the liner (0.003-0.005 wall thickness) is relatively more recrystallized than the outer component (0.31 wall thickness) (col. 7, lines 3-16). Foster et al. also disclose performing the final annealing at or below about 550°C preserve the enhanced corrosion resistance of an alloy composition substantially similar to that used in Dahlback (col. 4, line 51). Lowering the annealing temperature by 20°C to be at or below about 550°C – and possibly altering other parameters such as the duration to compensate – in order to achieve optimal material properties in the cladding tube would have been no more than an optimization within prior art conditions or through routine experimentation (see MPEP § 2144.05.II). Indeed, it may be possible to achieve the claimed properties at the exact prior art parameters.

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Because the degree of recrystallization is completely dependent on limitations established above to be known or obvious, the claimed limitations regarding recrystallization levels are also encompassed by the cited teachings. That is, if the skilled artisan were to implement the aforementioned obvious method using the known alloys, the degrees of recrystallization recited in claims 1-3 and 13-15 would be inherent to the resulting cladding tube. As to limitations which are considered to be inherent in a reference, note the case law of *In re Ludtke*, 169 USPQ 563, *In re Swinehart*, 169 USPQ 226, *In re Fitzgerald*, 205 USPQ 594, *In re Best et al*, 195 USPQ 430, and *In re Brown*, 173 USPQ 685, 688.

Claims 12 and 22 respectively set forth the use of a cladding tube and a fuel assembly comprising the cladding tube. Both of the cited references demonstrate that the mere use of cladding tubes in nuclear reactors is not novel, given that the features of the particularly claimed cladding tubes are known or obvious. Applicants' own description of Fig. 1 on page 9 of the specification demonstrates that the fuel assembly and the conventional components that comprise it are also known.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079.

The examiner can normally be reached on 9:30-6:00 Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

October 16, 2006


JACK KEITH
SUPERVISOR, PATENT EXAMINER